# CIVIL QUALITY CONSULTANTS & ENGINEERS

(Buildings Geo-Tech & Highway Materials Testing Laboratory)
An ISO 9001: 2008 Certified Company

JAS-ANZ
ISO 9001:2000 CERTIFIED


Job No.: CQCE/BBMP/KRIDL/W.No.12/2016-17 Date : 16.05.2016

## GRADATION FOR GSB (CLOSE GRADED)
## IS : 2720 (Part - 4)

**Client** : **Assistant Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.

**Agency** : **Technical Manager (West),** KRIDL, Bangalore.

**Name of Work** : Improvements to Asphalting at Babanna Layout 1st Main Road to Hesaragatta Main Road Junction in Ward No.12, of Shettyhalli Sub Division, BBMP, Bangalore.

**Date of Testing** : 16.05.2016

**Sample Source** : GSB, Mix plant Bangalore **Oven Dry Wt (gm) :** 10000

TABLE – 1

| Is Sieve Size in mm | Weight Retained (gm) | Cumulative Weight Retained (gm) | Cumulative % of Retained | Cumulative % of Passing | Specified Limits |
|---|---|---|---|---|---|
| 75.0 | 0 | 0 | 0.00 | 100 | 100 |
| 53.0 | 763 | 763 | 7.63 | 92.37 | 80-100 |
| 26.50 | 2584 | 3347 | 33.47 | 66.53 | 55-90 |
| 9.50 | 1682 | 5029 | 50.29 | 49.71 | 35-65 |
| 4.75 | 1284 | 6313 | 63.13 | 36.87 | 25-55 |
| 2.36 | 1163 | 7476 | 74.76 | 25.24 | 20-40 |
| 0.425 | 948 | 8424 | 84.24 | 15.76 | 10-25 |
| 0.075 | 821 | 9245 | 92.45 | 7.55 | 3-10 |

**Remarks:** Satisfies MORTH Specifications as per Table 400-1, Grading I

**Note:**

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3. Any Query regarding the report must be reported within 15 days from the date of testing.

For CIVIL QUALITY CONSULTANTS & ENGINEERS

Authorised Signatory

AE-12


Office & Laboratory : # 133, Bhuvaneshwarinagar, Dodda Basti Main Road, Bangalore - 560 056.
e-mail:civilqualityconsultants@gmail.com Ph: 080-23240644 / Mob: 8553518550

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Job No.: CQCE/BBMP/KRIDL/W.No.12/2016-17 Date : 16.05.2016

## ATTERBERG LIMITS TEST FOR GSB (CLOSE GRADED)
## IS : 2720 (Part - 5)

**Client** : **Assistant Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.

**Agency** : **Technical Manager (West),** KRIDL, Bangalore.

**Name of work** : Improvements to Asphalting at Babanna Layout 1st Main Road toHesaragatta Main Road Junction in Ward No.12, of Shettyhalli Sub Division, BBMP, Bangalore.

**Date of Testing** : 16.05.2016

As per MORTH Table : 400-1

| Sl. No. | Particulars | Test Results | Standards as per Specifications |
|---|---|---|---|
| 1 | Liquid Limit, % | 23.00 | 25.0% Maximum. |
| 2 | Plasticity Index, % | Non Plastic | 6.0% Maximum. |

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For CIVIL QUALITY CONSULTANTS & ENGINEERS

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Job No.: CQCE/BBMP/KRIDL/W.No.12/2016-17 Date : 21.05.2016

## GRADATION FOR WMM
## MORTH TABLE-400-11

**Client** : **Assistant Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.

**Agency** : **Technical Manager (west)**, KRIDL, Bangalore.

**Name of Work** : Improvements to Asphalting at Babanna Layout 1st Main Road to Hesaragatta Main Road Junction in Ward No.12, of Shettyhalli Sub Division, BBMP, Bangalore.

**Date of Testing** : 21.05.2016

**Material Type** : Wet Mix Macadam

Oven Dry.Wt 10000

| Is Sieve Size in mm | Weight Retained (gm) | Cumulative Weight Retained (gm) | Cumulative % of Retained | Cumulative % of Passing | Spec.Limits |
|---|---|---|---|---|---|
| 53 | 0 | 0 | 0 | 100 | 100 |
| 45 | 175 | 175 | 1.8 | 98.3 | 95-100 |
| 22.4 | 3362 | 3537 | 35.4 | 64.6 | 60-80 |
| 11.2 | 2214 | 5751 | 57.5 | 42.5 | 40-60 |
| 4.75 | 1332 | 7083 | 70.8 | 29.2 | 25-40 |
| 2.36 | 991 | 8074 | 80.7 | 19.3 | 15-30 |
| 0.600 | 362 | 8436 | 84.4 | 15.6 | 8-22 |
| 0.075 | 254 | 8690 | 86.9 | 13.1 | 0-8 |

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Job No.: CQCE/BBMP/KRIDL/W.No.12/2016-17 **Date:** 20.05.2016

## Aggregate Impact Value
IS: 2386 Part IV

| | |
|---|---|
| **Client** | **Assistant Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore. |
| **Agency** | **Technical Manager (west),** KRIDL, Bangalore. |
| **Name of the Work** | Improvements to Asphalting at Babanna Layout 1st Main Road to Hesaragatta Main Road Junction in Ward No.12, of Shettyhalli Sub Division, BBMP, Bangalore. . |
| **Type of Mix** | Wet Mix macadam |
| **Date of Testing** | 20.05.2016 |

| Sl No. | Details | Trial No. 1 | Trial No. 2 | Trial No. 3 | Average |
|---|---|---|---|---|---|
| 1 | Total weight of aggregate sample filling the cylindrical measure = $W_1$ g | 372 | 374 | 376 | |
| 2 | Weight of agregate passing 2.36 mm sieve after the test = $W_2$ g | 92 | 93 | 91 | |
| 3 | Weight of aggregate retained 2.36 mm sieve after the test = $W_3$ g | 280 | 281 | 285 | |
| 4 | Aggregate Impact value = percent fines 100* ($W_2/W_1$)% | 24.73 | 24.87 | 24.20 | 24.60 |

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

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AE-12
ಸಹಾಯಕ ಕಾರ್ಯನಿರ್ವಾಹಕ ಅಭಿಯಂತರರು
ಶೆಟ್ಟಿಹಳ್ಳಿ ಉಪವಿಭಾಗ, ದಾಸರಹಳ್ಳಿ ವಲಯ
ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ
ಎಸ್.ಎಂ. ರಸ್ತೆ, ರವೀಂದ್ರನಗರ, ಬೆಂಗಳೂರು.

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Job No.: CQCE/BBMP/KRIDL/W.No.12/2016-17 Date: 27.05.2016

## BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS MACADAM MIX
### AASHTO T 164 & AASHTO T 30

| | |
|---|---|
| CLIENT | **Assistant Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore. |
| AGENCY | **Technical Manager (west),** KRIDL, Bangalore. |
| NAME OF THE WORK | Improvements to Asphalting at Babanna Layout 1st Main Road toHesaragatta Main Road Junction in Ward No.12, of Shettyhalli Sub Division, BBMP, Bangalore. |
| SAMPLE I/D | Sample Supplied by Agency |
| DATE OF TESTING | 27.05.2016 |

**BITUMEN CONTENT DETERMINATION**

| Description | Trail 1 | Trail 2 |
|---|---|---|
| 1. Weight of Mixture before Test, g | 500 | 500 |
| 2. Weight of Mixture after Test, g | 483.5 | 483.5 |
| 3. Weight of Asphalt and Mineral matter Extracted, | - | - |
| 4. Weight of Mineral Matter, g. | - | - |
| 5. Weight of Ash, g | | |
| 6. Weight of Bitumen Extracted, g. (corrected) | 16.5 | 16.50 |
| 7. Bitumen content in % | 3.30 | 3.30 |
| 8. Average | 3.30 | |

**GRADATION AFTER EXTRACTION**

| SIEVE SIZE | Trail 1 | | | | JOBMIX |
|---|---|---|---|---|---|
| mm | Weight Retained, gm | % Retained | %Cummulative Retained | % Passing | Gradation |
| 26.5 | 0 | 0 | 0 | 100 | 100 |
| 19 | 33.65 | 6.96 | 6.96 | 93.04 | 90-100 |
| 13.2 | 148.3 | 30.67 | 37.63 | 62.37 | 56-88 |
| 4.75 | 173.52 | 35.89 | 73.52 | 26.48 | 16-36 |
| 2.36 | 63.9 | 13.21 | 86.73 | 13.27 | 4-19 |
| 0.3 | 32.3 | 6.68 | 93.41 | 6.59 | 2-10 |
| 0.075 | 10.6 | 2.19 | 95.60 | 4.40 | 0-8 |

| SIEVE SIZE | Trail 2 | | | | JOBMIX |
|---|---|---|---|---|---|
| mm | Weight Retained, gm | % Retained | %Cummulative Retained | % Passing | Gradation |
| 26.5 | 0 | 0 | 0 | 100 | 100 |
| 19 | 28.64 | 5.73 | 5.73 | 94.27 | 90-100 |
| 13.2 | 132.5 | 26.50 | 32.23 | 67.77 | 56-88 |
| 4.75 | 175.6 | 35.12 | 67.35 | 32.65 | 16-36 |
| 2.36 | 86.9 | 17.38 | 84.73 | 15.27 | 4-19 |
| 0.3 | 34.41 | 6.88 | 91.61 | 8.39 | 2-10 |
| 0.075 | 7.63 | 1.53 | 93.14 | 6.86 | 0-8 |

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Job No.: CQCE/BBMP/KRIDL/W.No.12/2016-17 31.05.2016

## BITUMEN CONTENT AND GRADATION DETERMINATION OF SEMI DENSE BITUMINOUS CONCRETE MIX

### AASHTO T 164 & AASHTO T 30

| | |
|---|---|
| CLIENT | **Assistant Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore. |
| AGENCY | **Technical Manager (west),** KRIDL, Bangalore. |
| NAME OF THE WORK | Improvements to Asphalting at Babanna Layout 1st Main Road toHesaragatta Main Road Junction in Ward No.12, of Shettyhalli Sub Division, BBMP, Bangalore. |
| DATE OF TESTING | 31.05.2016 |

**BITUMEN CONTENT DETERMINATION**

| Description | Trail 1 | Trail 2 |
|---|---|---|
| 1. Weight of Mixture before Test, g | 500 | 500 |
| 2. Weight of Mixture after Test, g | 473.5 | 474.5 |
| 3. Weight of Asphalt and Mineral matter Extracted, | - | - |
| 4. Weight of Mineral Matter, g. | - | - |
| 5. Weight of Ash, g | | |
| 6. Weight of Bitumen Extracted, g. (corrected) | 26.5 | 25.50 |
| 7. Bitumen content in % | 5.30 | 5.10 |
| 8. Average | 5.20 | |

**GRADATION AFTER EXTRACTION**

| SIEVE SIZE | Trail 1 | | | | JOBMIX |
|---|---|---|---|---|---|
| mm | Weight Retained, gm | % Retained | %Cummulative Retained | % Passing | Gradation |
| 13.2 | 0 | 0 | 0 | 100 | 100 |
| 9.5 | 32.6 | 6.88 | 6.88 | 93.12 | 90-100 |
| 4.75 | 238.6 | 50.39 | 57.28 | 42.72 | 35-51 |
| 2.36 | 45.63 | 9.64 | 66.91 | 33.09 | 24-39 |
| 1.18 | 36.24 | 7.65 | 74.57 | 25.43 | 15-30 |
| 0.3 | 58.15 | 12.28 | 86.85 | 13.15 | 9-19 |
| 0.075 | 30.74 | 6.49 | 93.34 | 6.66 | 3-8 |

| SIEVE SIZE | Trail 2 | | | | JOBMIX |
|---|---|---|---|---|---|
| mm | Weight Retained, gm | % Retained | %Cummulative Retained | % Passing | Gradation |
| 13.2 | 0 | 0 | 0 | 100 | 100 |
| 9.5 | 23.51 | 4.70 | 4.70 | 95.30 | 90-100 |
| 4.75 | 267.4 | 53.48 | 58.18 | 41.82 | 35-51 |
| 2.36 | 42.3 | 8.46 | 66.64 | 33.36 | 24-39 |
| 1.18 | 53.81 | 10.76 | 77.40 | 22.60 | 15-30 |
| 0.3 | 43.69 | 8.74 | 86.14 | 13.86 | 9-19 |
| 0.075 | 42.18 | 8.44 | 94.58 | 5.42 | 3-8 |

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